

# PATENT SPECIFICATION

845,840



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**International Classification:—B41f.**

## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

### Web Control Means for Rotary Offset Web Printing Presses

We, AMERICAN TYPE FOUNDERS CO., INC., a New Jersey Corporation, of 200 Elmora Avenue, Elizabeth, New Jersey, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to printing presses and more particularly to multiple unit web presses, and it has for its general object the provision of improved means for maintaining control of the web between the units in order to insure register of successive impressions.

15 In the conventional arrangement of roll-fed offset perfecting web presses, for example, the web of paper is fed from the roll stand at one end of the installation, and proceeds through the press in a substantially straight line. At each printing unit, both sides of the web are printed with one color. Each unit comprises two blanket cylinders, each having a plate cylinder running in contact therewith. Each blanket cylinder of a printing unit serves as an impression cylinder for the other blanket cylinder.

20 Now a blanket cylinder in presses of this type is provided with a gap (perhaps in the neighbourhood of five-eighths of an inch wide) in which the clamping mechanism for the ends of the blanket is located. The two cylinders of a given pair are so timed that the gaps come into registry upon each revolution. This means that the web passing through the unit is not under the proper pressure between the cylinders at this moment and it is possible for the web to move or slip relatively to the printing couple and as a consequence it may be out of register with the impression at the next unit.

40 This condition is particularly noticeable

in the case of cylinders of smaller diameters and in two unit presses and in presses of four or more units, in which only two units are being used for printing. In such cases the difficulty is aggravated and there is a definite tendency for double printing or mis-register.

The applicants have discovered that a very effective way of overcoming this lack of control of the web when the gaps come together is to cause the web to wrap slightly around at least one of the blanket cylinders instead of passing through the printing couple in absolute tangency with the cylinders. In this way the web is still in contact with the blanket portion of the cylinder through a slight arc even though it spans the gaps.

According to the invention, therefore, in an offset perfecting web printing press comprising at least one printing unit which includes a pair of blanket cylinders, the common axial plane of said cylinders being approximately perpendicular to the direction of advance of the web through the press; plate cylinders supported in the press for rolling contact with the respective blanket cylinders for applying inked images thereto; means supporting said blanket cylinders for rolling contact with the respective opposite surfaces of a web passing between them, each blanket cylinder thus acting as an offset printing cylinder and also as an impression cylinder with respect to the other of said blanket cylinders; a gap in the periphery of each of said blanket cylinders as where the blanket ends securing means are disposed, the registry of the two directly co-operating blanket cylinders being such that the two gaps coincide upon opposite sides of the web at one point during each rotation, the web being thus momentarily out of gripping contact with the cylinders; an auxiliary roller is supported in the press for rotation

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upon the delivery side of the printing unit, the printed web passing about said roller for at least a limited arcuate portion of its circumference, the said auxiliary roller deflecting the web beyond the printing unit relative to its direction of movement when entering the said unit, whereby the web is constrained to pass around one of said blanket cylinders through a slight arc of contact with the blanket thereon instead of substantially along the common tangent between the blanket cylinders at their point of contact, thus being always in contact with the blanket portion of one of the blanket cylinders of said unit.

In the accompanying drawings:—

Figure 1 is a somewhat diagrammatic view in side elevation of a two unit offset web press according to the invention; and

Figure 2 is a fragmentary view on an enlarged scale showing in some detail how the web is constrained to follow the contour of the cylinder for a short distance beyond the conjunction of the two gaps in the blanket cylinders.

In Figure 1 of the drawings there is shown in quite diagrammatic form a web press of the offset perfecting type, and this illustration may represent a two-unit press or the two adjacent units of a four-unit press of the general type now in use.

The press is designated generally by the reference numeral 10 and the first unit is shown at 11 and the second unit at 12. These printing units are supported and surrounded by the usual framework appurtenant to large presses of this type, which framework may be given the general designation 13.

The web roll is indicated at 15 and the axis shaft 16 of the roll is supported upon the framework 17 which also supports the set of preliminary feed rolls 18 through which the web 20 is fed toward the press proper.

The initial printing unit 11 includes an upper blanket cylinder 25 and a lower blanket cylinder 26, the upper cylinder 25 being supplied with an inked image of the text composition or other impression to be printed, by means of the plate cylinder 27, the lower blanket cylinder 26 being similarly impressed from the plate cylinder 28.

The second printing unit 12 is provided with an upper blanket cylinder 30, a lower blanket cylinder 31 and plate cylinders 32 and 33 which apply the inked image to the respective blanket cylinders.

However, since the invention satisfies a peculiar need in this type of press it has been illustrated in connection therewith. In presses of this type it will be understood that the web 20 passes between the two blanket cylinders 25 and 26 and between the cylinders 30 and 31 and receives an impression upon both sides from the inked images

on both of the blanket cylinders. In this case, of course, each blanket cylinder acts as an impression cylinder for the other one.

Referring now more particularly to Figure 2 of the drawings, it will be seen that the upper impression cylinders 25 and 30 are each provided with a blanket 40, the respective opposite ends of which are clamped between pairs of bars as at 41 and 42, one of the sets of clamping bars being received within an indentation 43 in one wall of the recess 45 formed in the structure of the cylinders 25, 30.

Similarly received within the recess 45 is the block 46 secured by means of the bolt 47. Within a semi-cylindrical indentation in the block 46 is received an adjustable cylindrical clamping element 50 which is adapted to grip the clamped end structure 42 of the blanket 40 and apply tension to the blanket to cause it to adhere snugly to the surface of the cylinders 25, 30.

It will be readily seen that the blanket clamping devices in these usual constructions leave a gap which is indicated at 60 where the end portions of the blanket 40 leave the cylindrical surface of the cylinders 25, 30 and enter the recess 45.

It will be noticed from an inspection of Figure 2 that the lower cylinder 26, 31 is provided with the blanket clamping devices which are the mirrored counterpart of those described in connection with the upper cylinders and the various parts are given the same reference numerals with the addition of a prime.

The fastening provisions for the blankets of the lower cylinders 26, 31 also leave a similar gap 60' which when the cylinders are set for proper operative registry, coincide once each revolution and provide a space, of more or less longitudinal extent, along the web where the web would be momentarily free of clamping support between the cylinders, and unless specific provisions are made, the web would be subject to displacement which would destroy the registry and cause double printing.

In order to prevent this eventuality and insure that the web is in firm rolling contact with one or the other of the blanket cylinders for an adequate arcuate extent to prevent any inadvertent slippage, means are provided for angling the course of the web 20 beyond the printing unit so that it is deflected beyond the printing unit relative to its direction of movement when entering the said unit and a portion of the web (say from the gap 60, 60' to approximately the point 61 shown in Figure 2) is bent around the cylinder (in this case the lower cylinder 26, 31) and this will be sufficient to insure sufficient frictional contact with the blanket to prevent undesired displacement of the web, such as would occur if the web were unsupported at

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the gaps 60 and 60'.

For accomplishing this, a pair of rollers 65 and 66 are installed upon the frame 13 preferably for free rotation between the printing units 11 and 12. Also, by preference, the rollers 65 and 66 are of the same diameter as the blanket cylinders and are mounted with their axes in the same horizontal plane as the axes of the upper cylinders 25 and 30 or lower cylinders 26 and 31. In the illustrated embodiment they are in the same horizontal plane as the lower blanket cylinders 26 and 31. The web 20 is trained around the lower periphery of the initial roller 65 and thence upwardly between the rollers which are spaced apart, for example as illustrated and thence around the upper peripheries of the second roller 66 from whence the web leads directly and tangentially between the bite of the blanket cylinders 30 and 31 of the second unit 12.

Preferably the surfaces of the rollers 65 and 66 are provided with prickly greater-like surfaces 70 formed with a multitude of minute points which serve to support the web at spaced points of exceedingly small area and thus minimize greatly the amount of ink which might be transferred from the freshly printed surface of the web to the rollers. It is preferred that both rollers 65 and 66 be provided with such surfaces. It will be noted also that by making the diameters of the rollers 65 and 66 the same as the diameters of the blanket cylinders, any transfer of ink from the impression offset onto the fine points of the surfaces 70 will be transferred back to the web in registry and will not appear in non-printed areas of the image.

Supplemental or auxiliary rollers of the same type may be installed beyond the second printing unit 12 for accomplishing the same purpose, as suggested at 65' and 66'. For most purposes the auxiliary rollers are idler rollers, but means for driving them may be provided whenever this is found desirable.

Quite obviously the same advantageous result may be obtained by arranging the auxiliary rollers 65 and 66 with their axes in the same horizontal plane as those of the upper blanket cylinders 25 and 30, in which case the web 20 will be led from the bite of the cylinders 25 and 30, in which case the web 20 will be led from the bite of the cylinders 25 and 26 upwardly around the upper portion of the periphery of the initial rollers 65 and thence downwardly to pass around the underside of the roller 66 and thence through the bite of the blanket cylinders 30 and 31 of the second unit.

It is understood that various changes and modifications may be made in the embodiment illustrated and described herein without departing from the scope of the invention as defined by the following claims.

#### WHAT WE CLAIM IS:—

1. An offset perfecting web printing press, comprising at least one printing unit which includes a pair of blanket cylinders, the common axial plane of said cylinders being approximately perpendicular to the direction of advance of the web through the press; plate cylinders supported in the press for rolling contact with the respective blanket cylinders for applying inked images thereto; means supporting said blanket cylinders for rolling contact with the respective opposite surfaces of a web passing between them, each blanket cylinder thus acting as an offset printing cylinder and also as an impression cylinder with respect to the other of said blanket cylinders; a gap in the periphery of each of said blanket cylinders as where the blanket ends securing means are disposed, the registry of the two directly co-operating blanket cylinders being such that the two gaps coincide upon opposite sides of the web at one point during each rotation, the web being thus momentarily out of gripping contact with the cylinders, wherein an auxiliary roller is supported in the press for rotation upon the delivery side of the printing unit, the printed web passing about said roller for at least a limited arcuate portion of its circumference, the said auxiliary roller deflecting the web beyond the printing unit relative to its direction of movement when entering the said unit, whereby the web is constrained to pass around one of said blanket cylinders through a slight arc of contact with the blanket thereon instead of substantially along the common tangent between the blanket cylinders at their point of contact, thus being always in contact with the blanket portion of one of the blanket cylinders of said unit.

2. An offset perfecting web printing press according to claim 1, wherein the diameter of the said auxiliary roller is of equal length to the diameter of said blanket cylinders so that any ink which might be offset on to the rollers will be transferred back to the web in register and will not appear on non-printed areas of the impression image.

3. The web printing press as set forth in claim 1 or 2 in which said auxiliary roller is provided with a greater-like surface comprising a multiplicity of minute protruding points, whereby only the ends of said minute points contact the web and off-setting of ink on to the roller is minimized.

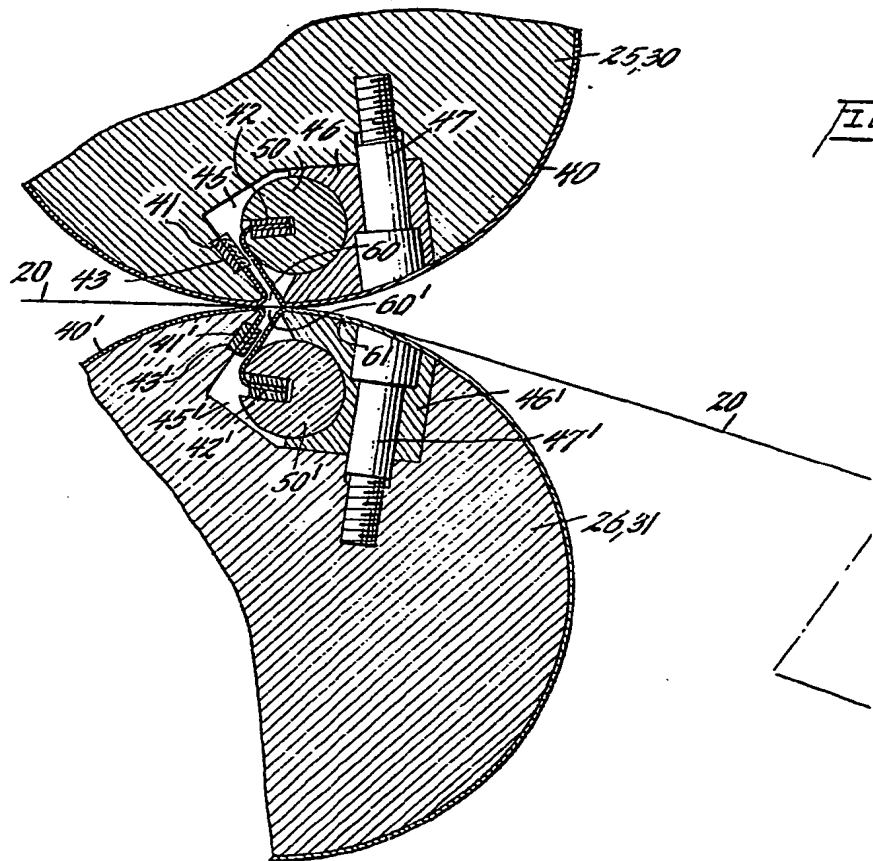
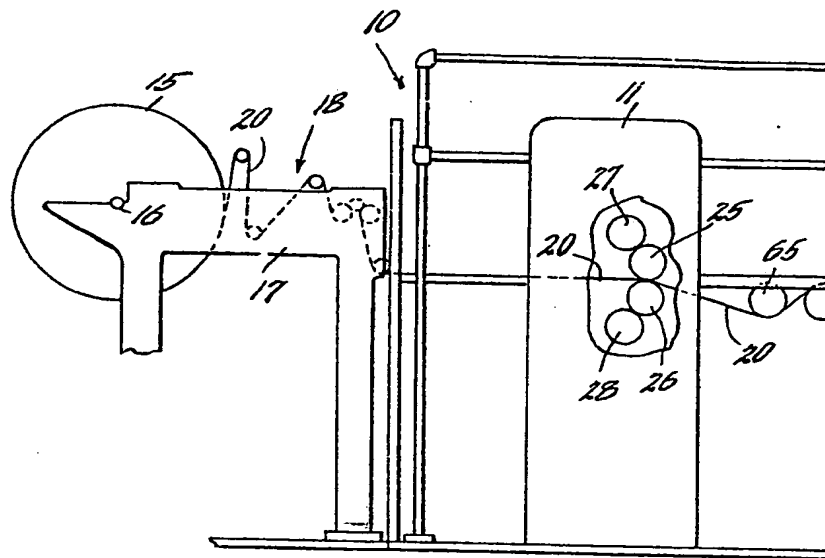
4. The web printing press as set forth in any preceding claim in which a second auxiliary roller is disposed close to but not in rolling relationship to the first auxiliary roller, and the web passing between the rollers and contacting them both for a limited arcuate extent, the second auxiliary roller being supported in such a position that the web may be fed off said second

roller in the common plane of tangency of two similar blanket cylinders of a succeeding printing unit.

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FIG. 1.

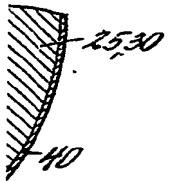
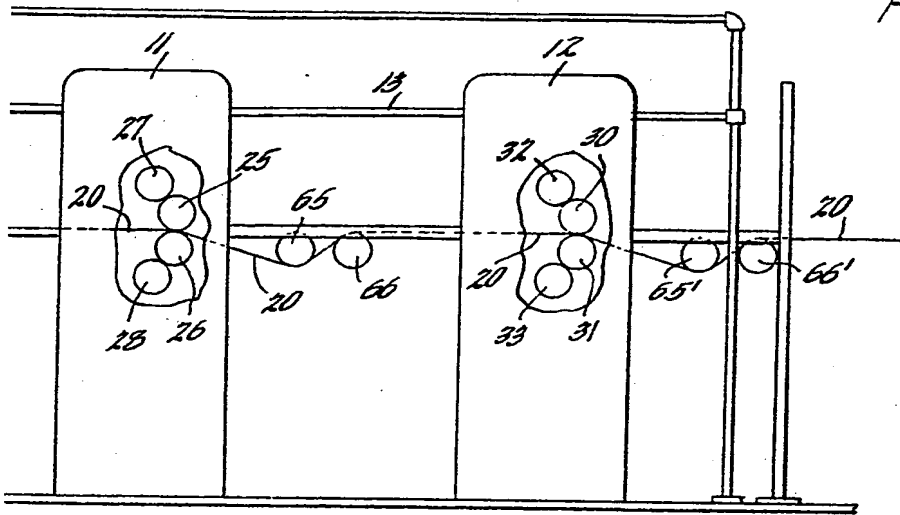
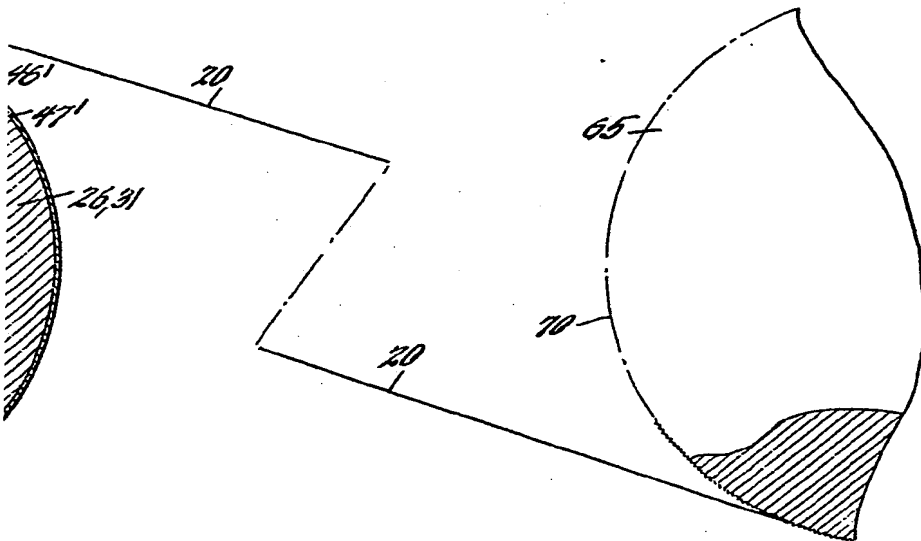


FIG. 2.



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 1 SHEET  
 This drawing is a reproduction of  
 the Original on a reduced scale.

FIG. 1.

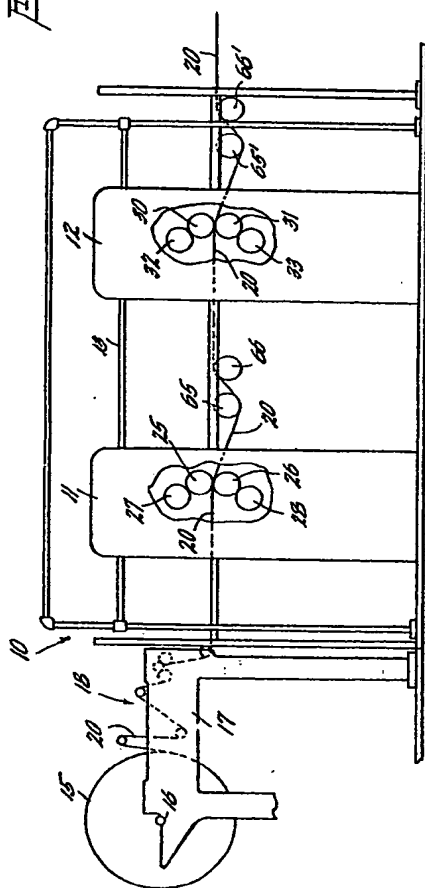
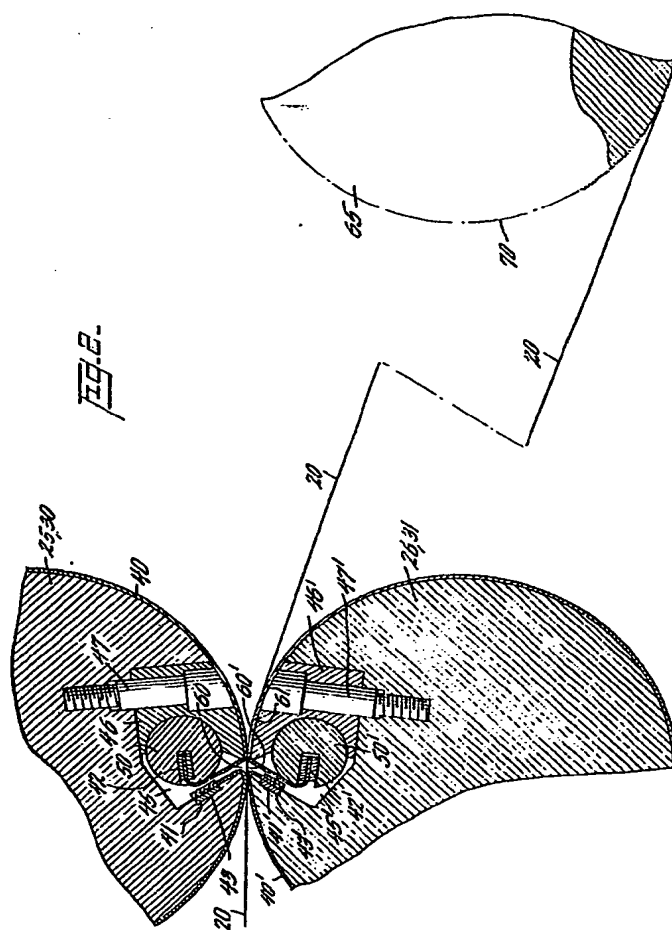


FIG. 2.



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